

What is claimed is:

1. A method of fabricating a semiconductor probe which includes a cantilever and a tip doped with first impurities formed on an end portion of the cantilever, wherein a resistive region lightly doped with second impurities is formed at a peak of the tip, and first and second semiconductor electrode regions heavily doped with the second impurities are formed at inclined surfaces of the tip, the polarity of the second impurities being opposite to that of the first impurities, the method comprising:
 - 10 (a) forming a stripe-shape mask layer on a substrate doped with first impurities and forming first and second semiconductor electrode regions by heavily doping second impurities on the substrate uncovered by the mask layer, the second impurities being opposite in polarity to the first impurities;
 - 15 (b) annealing the substrate to narrow a distance between the first and second semiconductor electrode regions and form resistive regions lightly doped with the second impurities at outer boundaries of the first and second semiconductor electrode regions;
 - 20 (c) patterning the mask layer in a predetermined shape and etching a portion of a top surface of the substrate not covered by the patterned mask layer to form a resistive tip; and
 - (d) etching a bottom surface of the substrate to form a cantilever with the resistive tip formed at an end portion thereof.
- 25 2. The method of claim 1, wherein step (b) forms a tip forming portion by allowing the resistive regions obtained by diffusing the first and second semiconductor electrode regions to come in contact with each other.
- 30 3. The method of claim 1, wherein step (c) further includes forming a stripe-shape photoresist in an orthogonal direction to the mask layer, and performing an etching process to make the mask layer in a

rectangular shape.

4. The method of claim 1, wherein step (c) further includes:
removing the patterned mask layer from the substrate and
5 annealing the substrate under an oxygen atmosphere to form an oxide
layer of a predetermined thickness on the surface of the substrate; and

removing the oxide layer to sharpen an end of the resistive
regions.

10 5. The method of claim 4, wherein step (c) forms a tip forming
portion by diffusing the first and second semiconductor electrode regions
come in contact with each other on an upper part of the substrate.

6. The method of claim 1, wherein the first impurities are
15 p-type impurities, and the second impurities are n-type impurities.

7. The method of claim 1, wherein the first impurities are
n-type impurities, and the second impurities are p-type impurities.